II. REMARKS

Before the amendments made herein, claims 1-49 and 105-119 were pending. Claims 2-4 and 6-10 have been canceled herein with out prejudice. Claims 120-125 have been added herein. Accordingly, after the amendments made herein are entered, claims 1, 5, 11-49 and 105-125 will be pending.

A. Regarding the amendments

Claims 1 and 105 have each been amended to more clearly indicate that the recited polysaccharide binding domain containing composition has less polysaccharidase catalytic activity than that of a crude extract from cells expressing polysaccharidase. The amendment is supported by the specification (referring to PCT WO 01/34091), for example, at page 27, lines 21-23.

Claim 105 has been amended herein to more clearly indicate that the moiety can be covalently coupled to the polysaccharide binding domain at any stage. The amendment is supported by the specification, for example, at page 6, line 3 to page 8, line 21, which discloses that the polysaccharide binding domain can be covalently bound to (or include) a wide variety of moieties and then contacted with polysaccharide structures, as disclosed at page 4, lines 19-27, as well as claims 12 to 42 as originally filed.

New claim 120 requires that the catalytic activity reflects a stoichiometry of less than one functional catalytic domain per 1000 functional binding domains. New claim 121 requires that polysaccharide binding domain containing composition has no catalytic polysaccharidase activity. The amendment is supported by the specification, for example, at page 27, lines 19-24.

New claim 122 requires that polysaccharide containing material has increased wet strength as compared to said polysaccharide structures without having been contacted by said polysaccharide binding domain containing composition. New claim 123 requires that polysaccharide containing material has a changed surface property as compared to said polysaccharide structures without having been contacted

by said polysaccharide binding domain containing composition, the surface property being hydrophobicity, hydrophilicity, wetability or surface texture.

New claim 124 requires that the polysaccharide containing material has a changed surface charge or electrical conductivity as compared to said polysaccharide structures without having been contacted by said polysaccharide binding domain containing composition. Finally, new claim 125 requires that the polysaccharide containing material has a changed mechanical property as compared to said polysaccharide structures without having been contacted by said polysaccharide binding domain containing composition, the mechanical property being tensile strength, resistance to shear, abrasion resistance, frictional coefficient or elasticity. New claims 122 to 125 are supported by the specification, for example, at page 41, lines 5-15.

Because the amendments made herein are fully supported by the specification, no issue of new matter arises.

B. Regarding the indefiniteness rejections

1. at least one desired . . . property

The claims continue to be rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for reciting the phrase "at least one desired structural, chemical, physical, electrical and/or mechanical property." More specifically, the Action alleges that "desired" properties are unclear because they are dependent on the thinking of the artisan. Applicants respectfully traverse the rejection.

The language in claims 1 and 105 and cited by the Action has been deleted herein. In view of this amendment, Applicants respectfully request that this rejection be withdrawn.

2. before during and after

The claims continue to be rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for reciting the phrase "before, during and/or after processing said polysaccharide structures into the polysaccharide containing material." More specifically, the Action alleges that there does not appear to be any particular distinction in these time periods and that the distinction between during and after would depend on the desired product. Applicants respectfully traverse the rejection.

The language in the claims and cited by the Action has been deleted herein. In view of this amendment, Applicants respectfully request that this rejection be withdrawn.

3. Claim 105

Claim 105 is rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. Specifically, the Action alleges that it is not clear what is intended by reciting that something is covalently bound to a composition.

In response, claim 105 has been amended herein to more clearly indicate that the recited moiety is covalently bound to at least one of the polysaccharide binding domains of the composition. In view of this amendment, Applicants respectfully request that this rejection be withdrawn.

4. Claims 108 and 114

Claims 108 and 114 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. Specifically, the Action alleges that "protein translation or protein expression" are not types of bonding per se.

In response, this phrase has been deleted from the claims. In view of this amendment, Applicants respectfully request that this rejection be withdrawn.

C. Regarding the written description rejection

Claims 105-112 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Applicants respectfully traverse the rejection.

The subject application discloses a process of manufacturing a polysaccharide containing material, comprising contacting polysaccharide structures of the polysaccharide containing material with a polysaccharide binding domain, and thereafter covalently coupling at least one moiety or group to the polysaccharide binding domain. Page 10, lines 29-38.

Moreover, the subject specification makes clear that a polysaccharide binding domain containing composition includes a polysaccharide binding domain and at least one additional polysaccharide binding domain covalently coupled thereto. Page 5, line 36 to page 6, line 2.

In addition, the subject application discloses that the process of manufacturing a polysaccharide containing material includes contacting polysaccharide structures of the polysaccharide containing material with a polysaccharide binding domain containing composition. Page 4, lines 19-27. The process recited in claim 105 merely adds the covalent coupling of a moiety to a polysaccharide binding domain, as discussed above. Finally, the specification discloses numerous examples of various moieties being covalently couples to the polysaccharide binding domain. See, for example, pages 9 and 10.

In view of this disclosure, the specification does reasonably convey to the skilled artisan that Applicants were in possession of the claimed invention. Accordingly, Applicants respectfully request that this rejection be withdrawn.

D. Regarding the obviousness rejections

1. Bates

Claims 1-11 and 113-119 are rejected under 35 U.S.C. § 103(a) as allegedly obvious in view of Bates et al. (WO 97/07203). Applicants respectfully traverse the rejection.

The Action alleges that Bates discloses the use of cellulase and amylase to modify various polysaccharides at various stages of processing. The Action reasons that these polysaccharidase enzymes inherently comprise polysaccharide binding domains. Further, the Action alleges that it would have been obvious for the Artisan to use multiple enzymes with a reasonable expectation of success because of the additive effects disclosed by Bates. Applicants respectfully traverse the rejection.

To more clearly define the invention, the claims have been amended herein to require contacting a) polysaccharide structures with b) a polysaccharide binding domain containing composition that includes a polysaccharide binding domain and at least one additional polysaccharide binding domain covalently coupled thereto. By contrast, even assuming that it would have been obvious to use multiple enzymes, it would not have been remotely obvious to the skilled artisan to contact polysaccharide structures with multiple enzymes where the enzymes are covalently coupled to each other.

Rather, Bates teaches linking an effector moiety to a protein/enzyme (even assuming the protein has a polysaccharide binding domain) which is linked to a polymer. Even assuming multiple effector moieties are used and, therefore, multiple proteins/enzymes are used, it is not remotely suggested that two or more of these proteins/enzymes be covalently linked to each other before they contact the polymer. In this regard, it should also be noted that Bates requires that the effector moiety and protein/enzyme be different. See page 5, lines 23-24, for example.

In light of the amendment made herein, Applicants respectfully request that this rejection be withdrawn.

2. Schulen

Claims 1-12, and 113-115 and 117-119 are rejected under 35 U.S.C. § 103(a) as allegedly obvious in view of Schulen et al. (US 5,792,641). Applicants respectfully traverse the rejection.

The claims have been amended herein to require that the polysaccharide binding domain containing composition has less catalytic polysaccharidase activity than that of a crude extract from cells expressing polysaccharidase. By contrast, Schulen requires a catalytically active domain. See abstract, for example. Indeed, Schulen teaches multiple ways of improving the catalytic activity of the cellulase enzyme. Thus, Schulen teaches away from the invention as now claimed.

In light of the amendment made herein, Applicants respectfully request that this rejection be withdrawn.

III. CONCLUSION

All of the issues raised in the Office Action have been addressed and are believed to have been overcome. Accordingly, it is respectfully submitted that all the claims under examination in the subject application are allowable. Therefore Applicants respectfully request a Notice of Allowance to this effect.

Respectfully submitted,

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Date: December 6, 2006

Enclosed:
Request for Continued Examination (RCE)